PLANNING FOR DOUGHT CLARKE COUNTY, VIRGINIA

Presented by:

John Staelin

Chairman, Board of Supervisors

Clarke County, Virginia

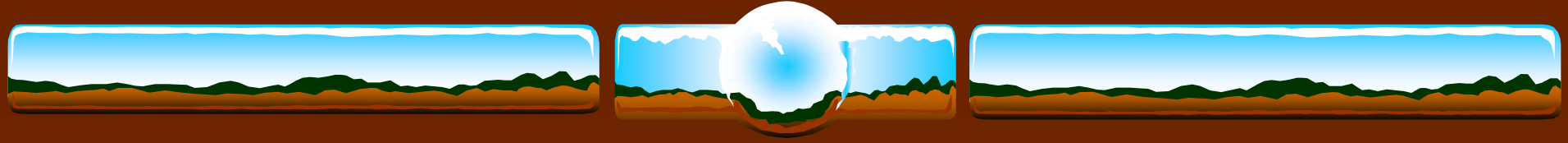
Introduction/Overview

Objective

Discuss Clarke County's approach to Drought Management

- What have we been doing and why.
- The advantages of a local approach.
- Components and Implementation

  Drought Ordinance & Plan



A History of Concern Led to Action

- City of Winchester interbasin transfer
- Concern about low river flows since early ’90s
- 1999-2002 drought - many wells go dry!

- Water is a regional issue needing regional action
- But, we recognized need for a localized approach to managing our shared resource

Regional Actions

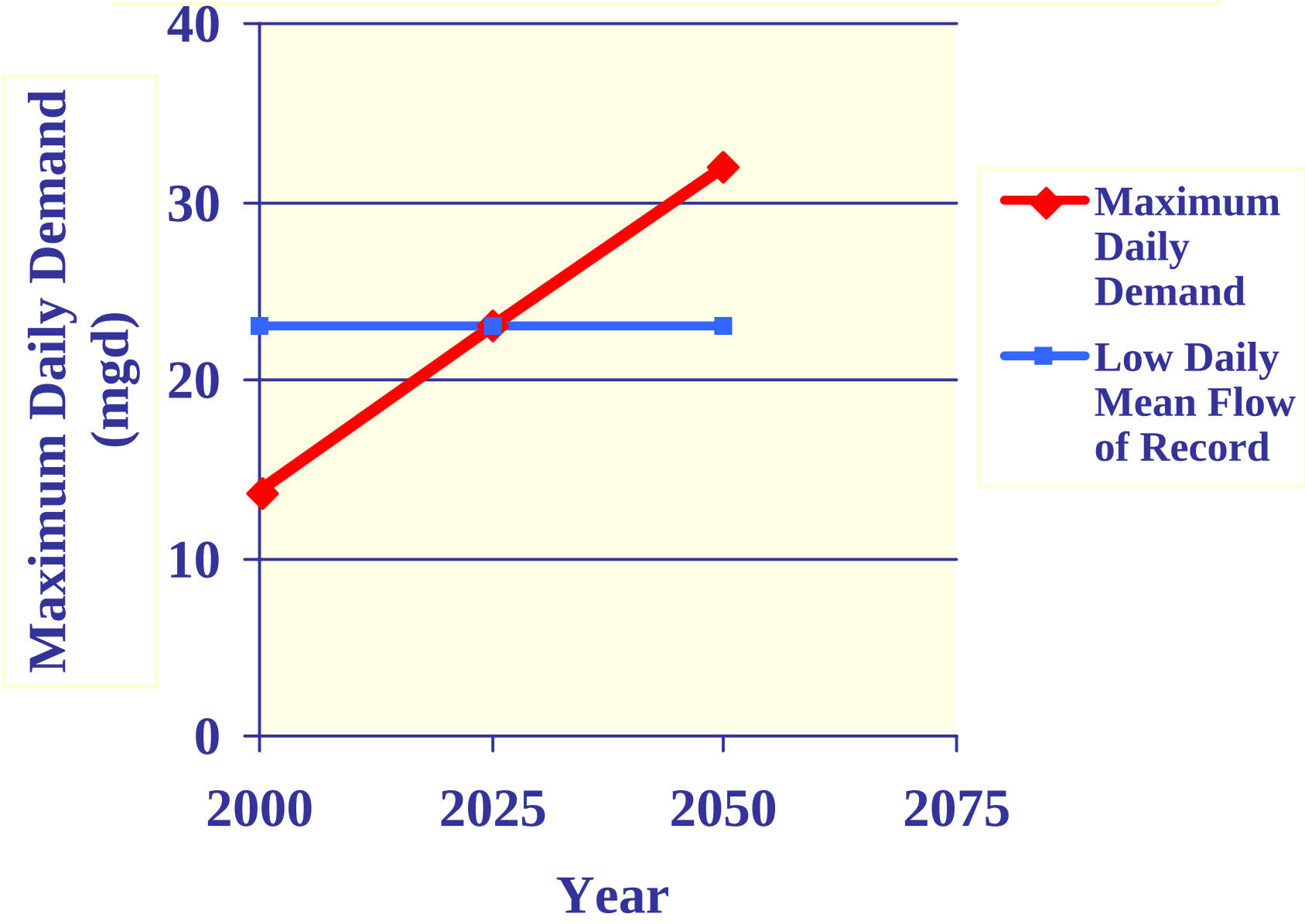
Minimum Instream Flow (MIF) Studies

- How low is too low.
- Goal was to establish aquatic thresholds – where would fish populations be impacted
- Contracted with USGS, VA Tech – partial funding General Assembly
- Better data = Better Decisions

Regional Actions

- Five counties in two states conducting studies with USGS
- Sharing data
- Created Regional Water Policy Committee
- Wrote a Regional Water Resources Strategic Plan
- Plan to have a regional water budget

Supply and Demand in the North Fork



Drought Response Plan
Shenandoah Basin

Key Point:

- To be accepted it must be based on data and science
- Must also be easy to understand

Drought Plan for Basin

- Looked at Interstate Commission on the Potomac River Basin (ICPRB) drought management for DC metro area
- Modified VA Drought Assessment Plan – unique to Shenandoah Valley
  - incorporate data – science to back up policy

Clarke County
Drought Plan/Ordinance

Modified Basin Plan

Primary Goals: Local cooperation, coordinated drought response, and public education

- **Drought Indicators – use our local data**
- **Drought Stages**
- **What happens when stages are declared**

Drought Indicators

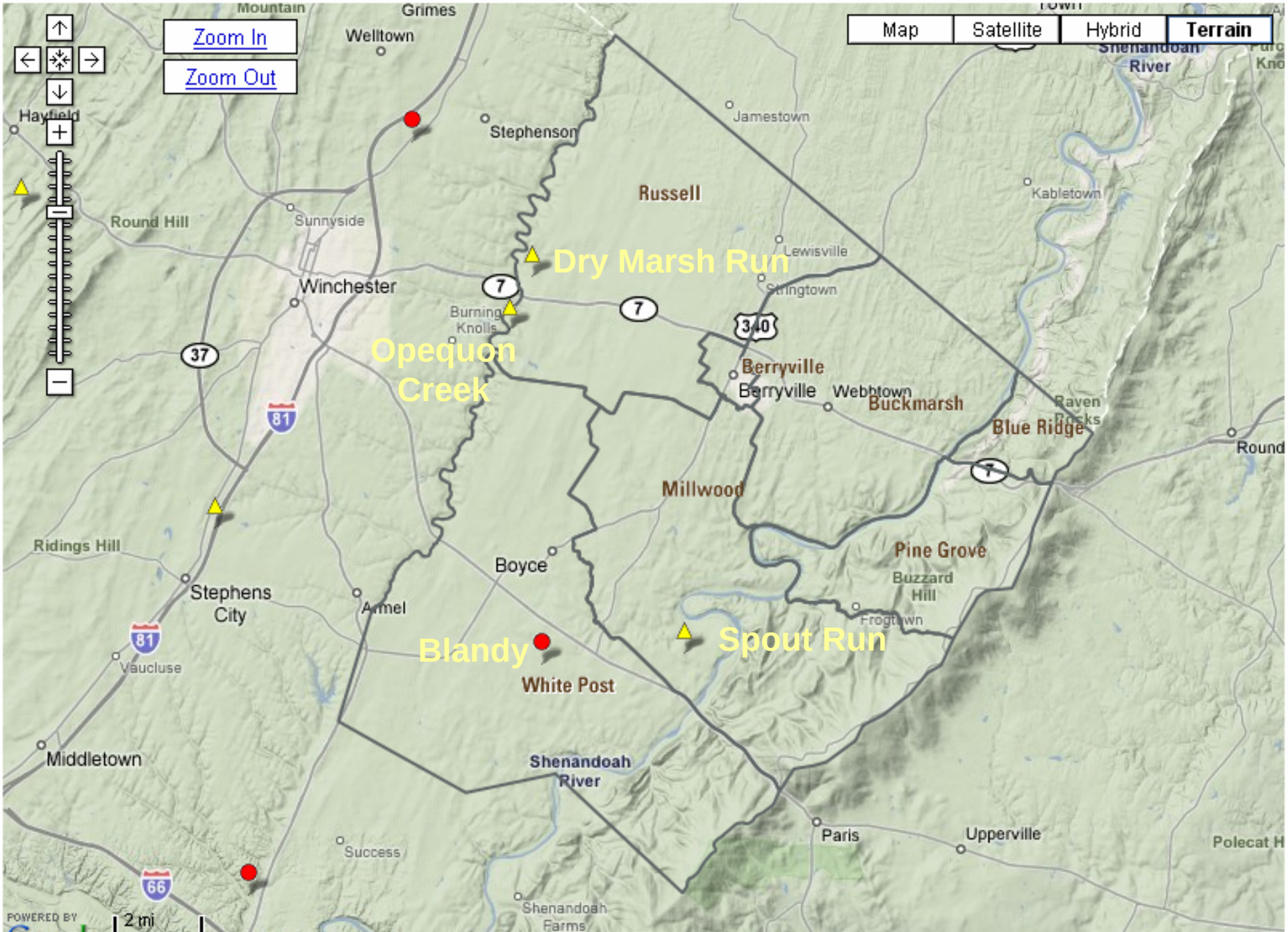
3 Main Indicators

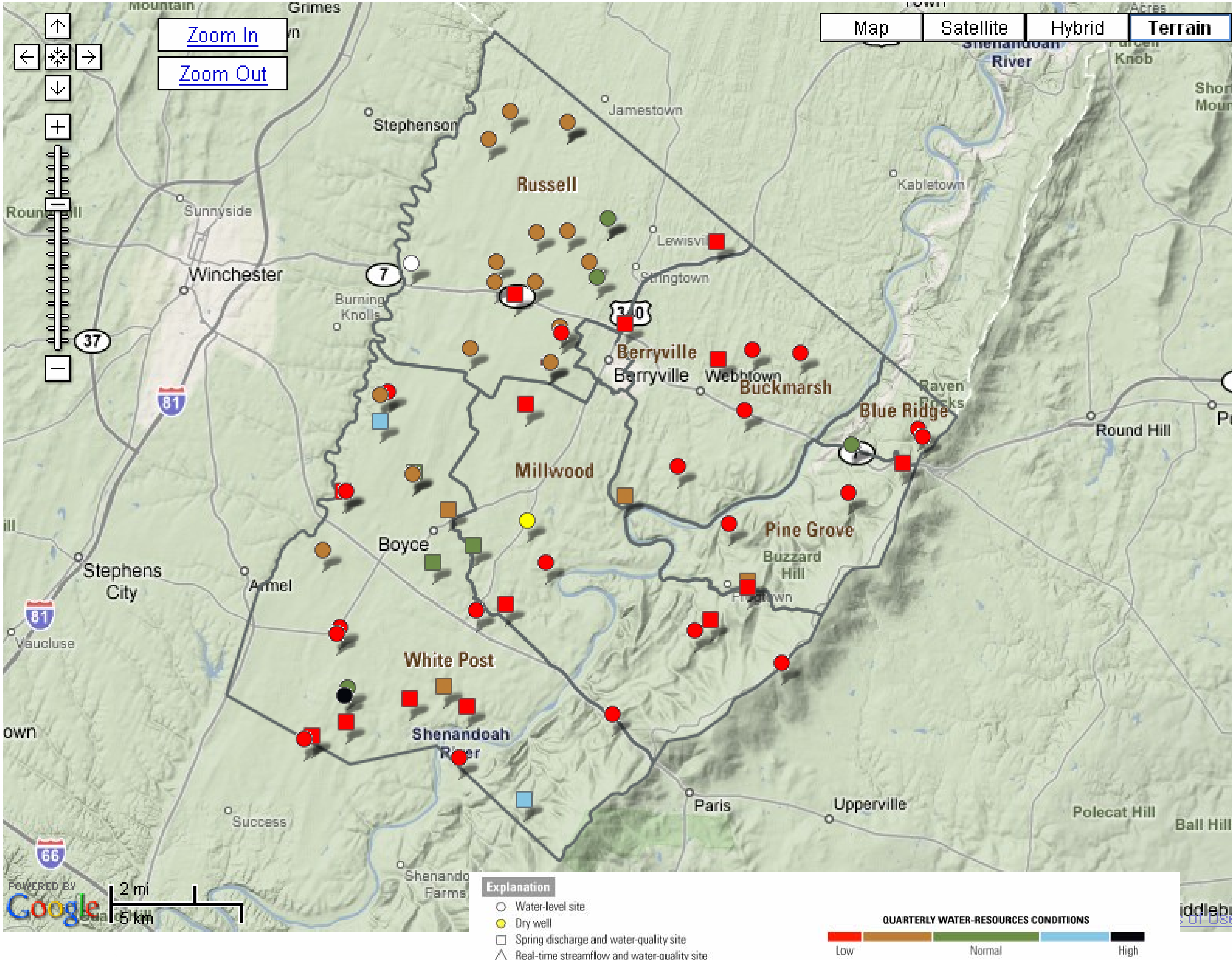
- **precipitation**
- **stream flow**
- **ground water levels – Blandy, USGS study**

Other

- **Standardized Precipitation Index**
- **Palmer Drought Severity Index**
- **Crop Moisture Index**
- **NOAA monthly and seasonal precipitation outlook**

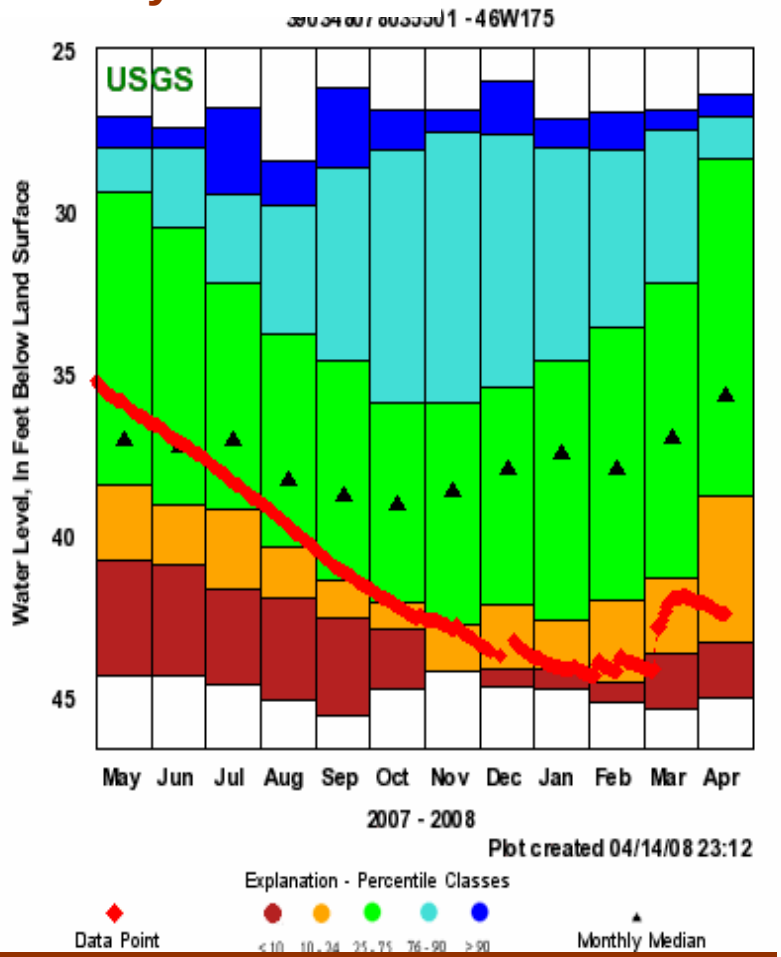
Clarke County Real-Time Water-Monitoring Networks





Map
Satellite
Hybrid
Terrain
Zoom In
Zoom Out
Grimes
Stephenson
Jamestown
Shenandoah River
Purcell Knob
Short Mountain
Kabletown
Russell
Sunnyside
Lewisville
Winchester
Stringtown
Burning Knolls
Berryville
Berryville
Webbtown
Buckmarsh
Raven Rocks
Blue Ridge
Round Hill
Millwood
Pine Grove
Buzzard Hill
Boyce
Stephens City
Vaucluse
White Post
Shenandoah River
Paris
Upperville
Polecat Hill
Ball Hill
Success
Shenandoah Farms
2 mi
5 km
POWERED BY Google
Explanation
Water-level site
Dry well
Spring discharge and water-quality site
Real-time streamflow and water-quality site
QUARTERLY WATER-RESOURCES CONDITIONS
Low
Normal
High

Blandy Well Level

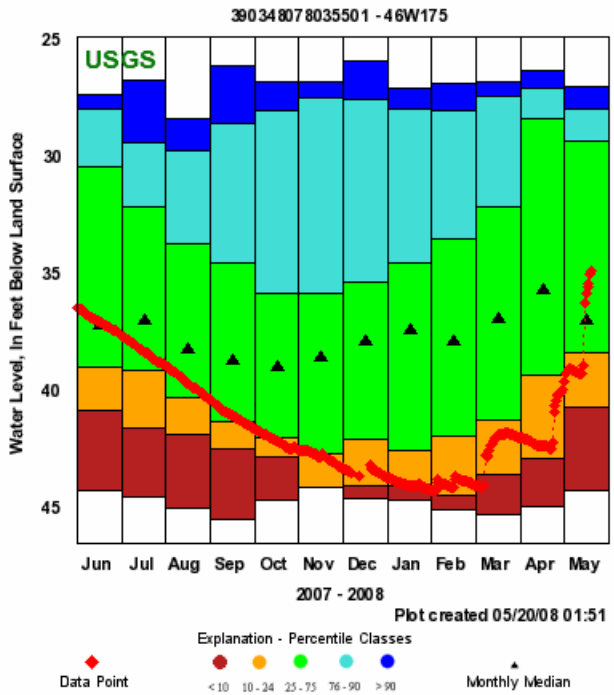


Site Statistics

Most recent data value: 42.31 on 4/14/2008
Period of Record Monthly Statistics for 390348078035501
Depth to water level, feet below land surface
All Approved Continuous & Periodic Data Used In Analysis
Note: Bold values in the table indicate closest statistic to the most recent data value.

Month	Lowest Level	10th %ile	25th %ile	50th %ile	75th %ile	90th %ile	Highest Level	Number of Years
Jan	44.67	44.04	42.56	37.37	34.53	27.96	27.08	20
Feb	45.05	44.43	41.91	37.87	33.49	27.99	26.83	19
Mar	45.25	43.58	41.24	36.90	32.10	27.37	26.82	19
Apr	44.96	**43.24**	**38.68**	35.61	28.30	27.01	26.33	20
May	44.23	40.71	38.35	36.99	29.35	27.93	26.98	19
Jun	44.28	40.85	38.99	37.18	30.45	27.96	27.36	20
Jul	44.53	41.56	39.08	36.96	32.12	29.40	26.71	19
Aug	44.98	41.88	40.30	38.21	33.70	29.73	28.34	21
Sep	45.51	42.49	41.33	38.68	34.54	28.57	26.13	20

Site Statistics



Most recent data value: 3
Period of Record Monthly Statis
Depth to water level, fee
All Approved Continuous & Peri
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Jul	44.53	41.56	39.08	36.96
Aug	44.98	41.88	40.30	38.21
Sep	45.51	42.49	41.33	38.68
Oct	44.63	42.84	41.96	38.99
Nov	44.11	44.08	42.65	38.57
Dec	44.61	44.02	42.05	37.91

Statistics Options

View month/year statistics

Local Real-time Stream Gage Data

Google

ater_Resources_Veri... | WTGBFM | Rainfall Info Berryville | Blandy Well St

apsOnline - Clarke County, V... | USGS VAWSC: Clarke County...

uration Plot and Table of 7-Day Average Streamflo

01615000 OPEQUON CREEK NEAR BERRYVILLE, VA

LOCATION.--Latitude 39°10'29", Longitude 78°04'42", North American Datum of 1983, Frederick County, VA, Hydrologic Unit 02070004.

DRAINAGE AREA.--58.2 square miles.

PERIOD OF RECORD.--October 1943 to September 1997, October 2002 to current yea

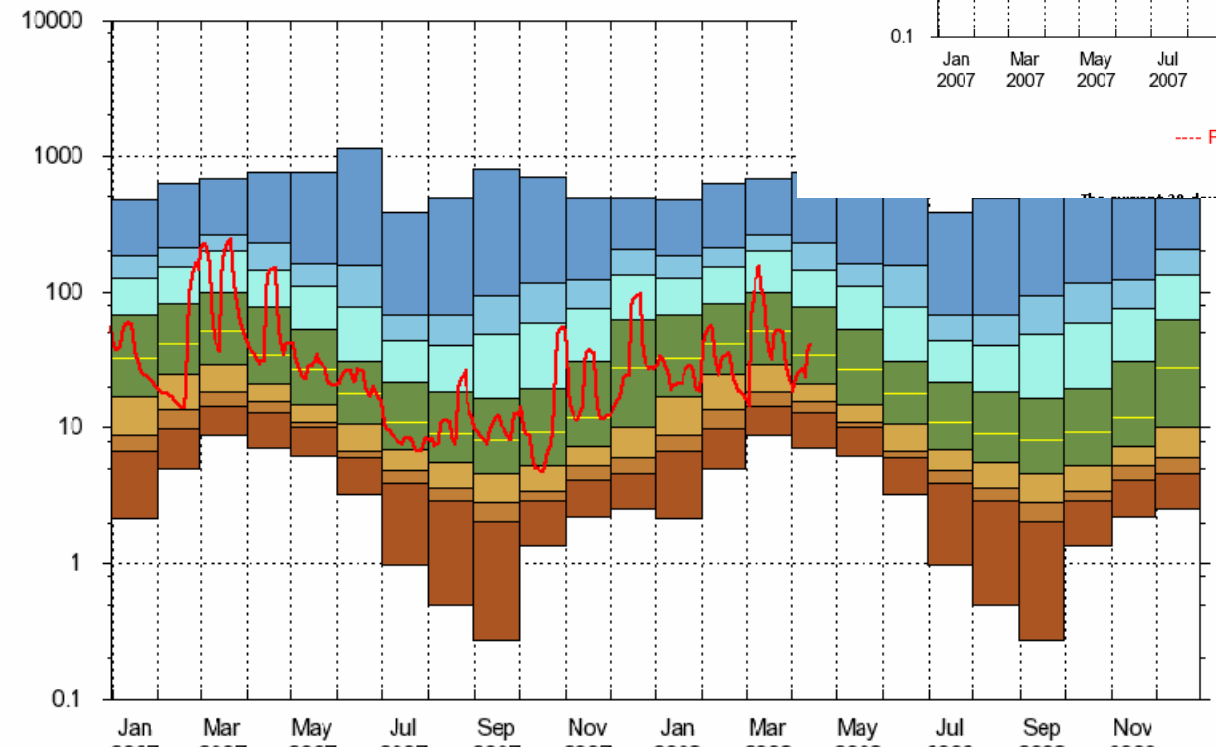
DURATION STATISTIC COMPUTATION PERIOD.--All data through September 2005 ex

REGULATION.--Wastewater treament plant inflows from July 1988 through September

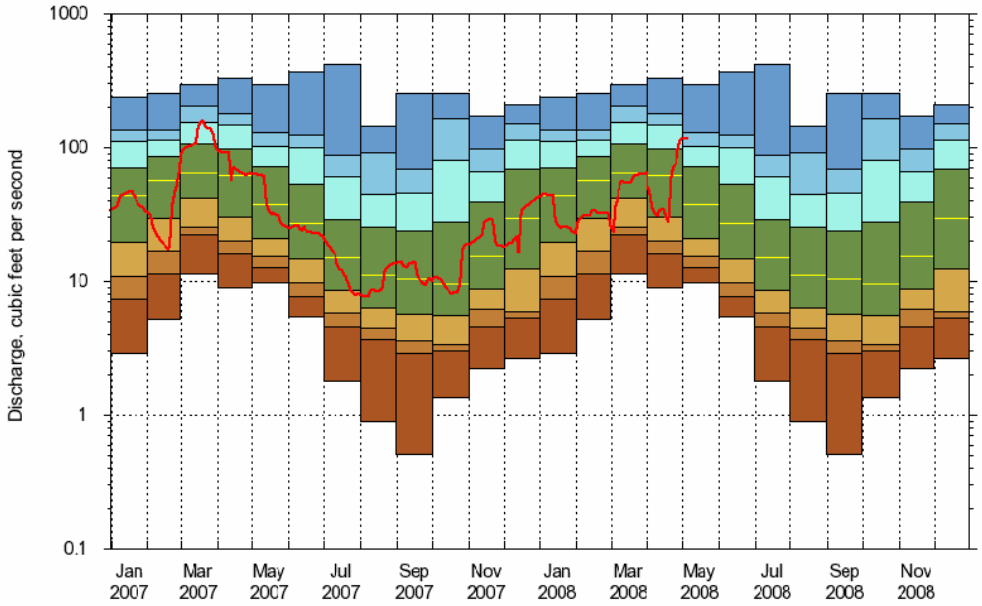
GAGE OPERATION.--U.S. Geological Survey, Virginia Water Science Center.

Duration Plot with 7-Day Average Streamflow Conditions

01615000 OPEQUON CREEK NEAR BE



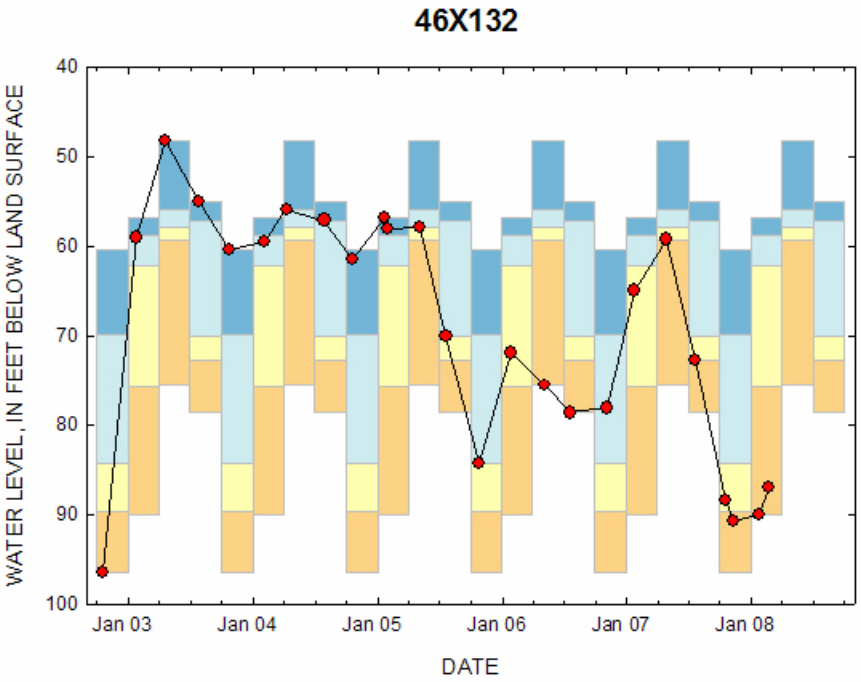
01615000 OPEQUON CREEK NEAR BERRYVILLE, VA



---- Provisional Data Subject to Revision ----

Clarke County Quarterly Water-Level Statistics

Statistics based on the period of record for measurements shown.

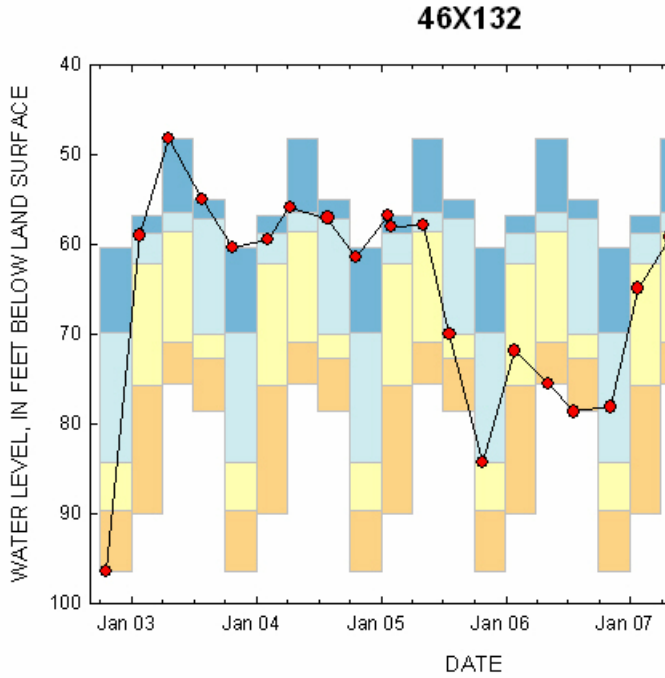


Quarterly water-level statistics--In feet below land surface

High
75th
50th
25th
Low
Percentile

Quarterly water-level measurement--In feet below land surface

Provisional data subject to revision



Connect Data To Action

Watch

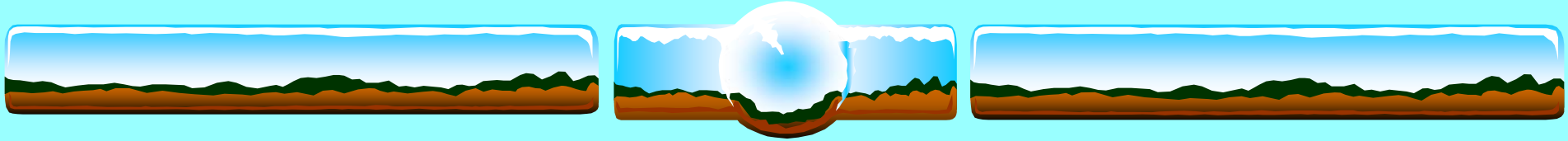
- **Precipitation at or below normal for time period**
- **Stream Flow 10-25%**
- **Groundwater 10-25%**

Warning

- **Precipitation at or below normal for time period**
- **Stream Flow below 10%**
- **Groundwater below 10%**

Emergency

- **Precipitation at or below normal for time period**
- **Stream Flow at or below 5%**
- **Groundwater at or below 5%**



Drought Stage Declaration
2 indicators exceed stage level

- **Watch**
  - Encourage voluntary water conservation
- **Warning**
  - goal of reducing total water usage by 5-10%
  - water use restrictions consistent with local water supply conditions
- **Emergency**
  - mandatory water conservation requirements

Government Response

Staff will advise the Board of Supervisors that a drought declaration is needed.

The Board will issue a press release indicating the reasons for the declaration.

Staff will coordinate with public waterworks

Citizens will be asked to take appropriate water conservation actions

County will include water conservation information on its website and will distribute water conservation information as broadly as possible.

Citizen Response

Conservation for Drought Watch Stage (Voluntary)

INDOOR RESIDENTIAL USE:

•Use dishwashers only when they are full.

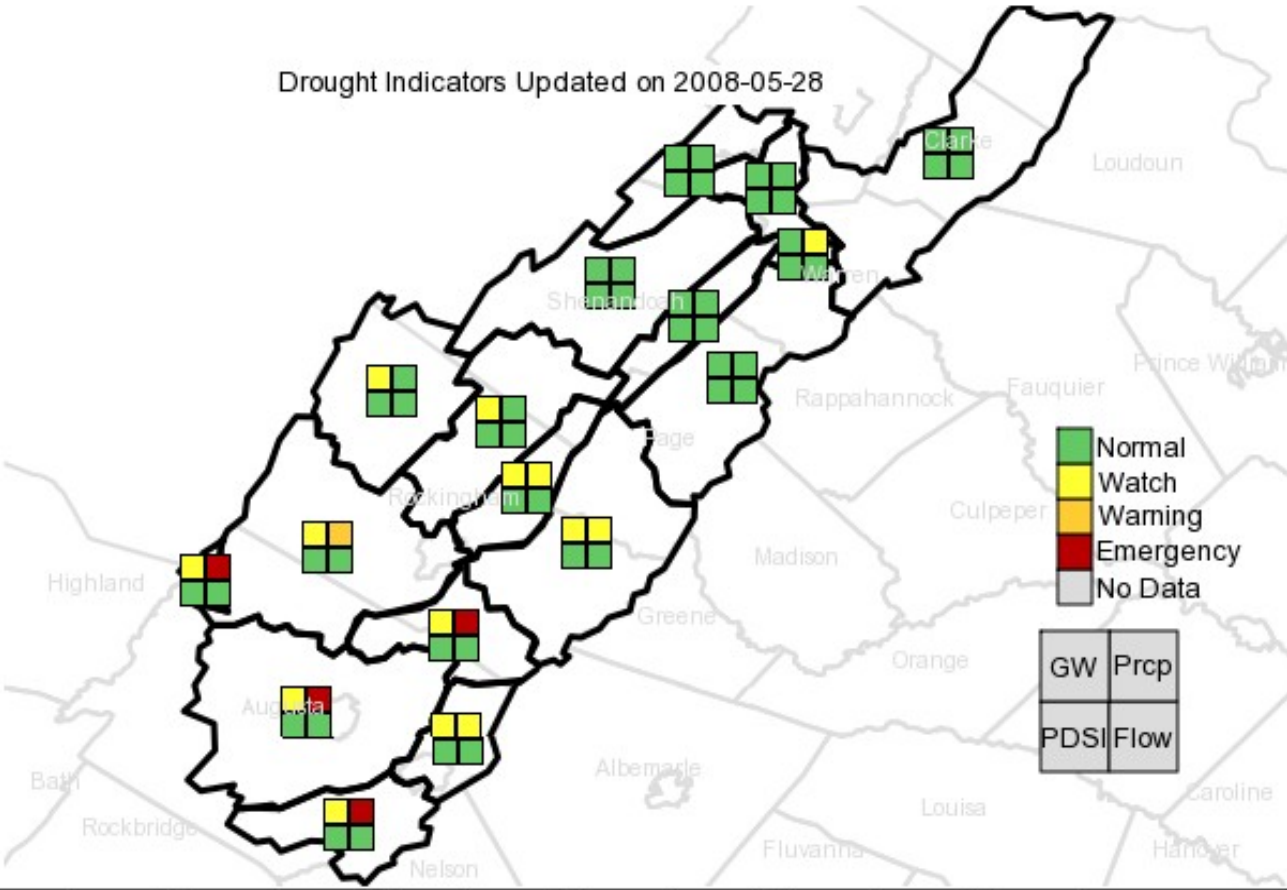
•Wash only full loads of laundry. Adjust water level if possible.

•Adapt plumbing with flow-restricting or other water-saving devices. These are usually inexpensive and easy to install.

OUTDOOR USE:

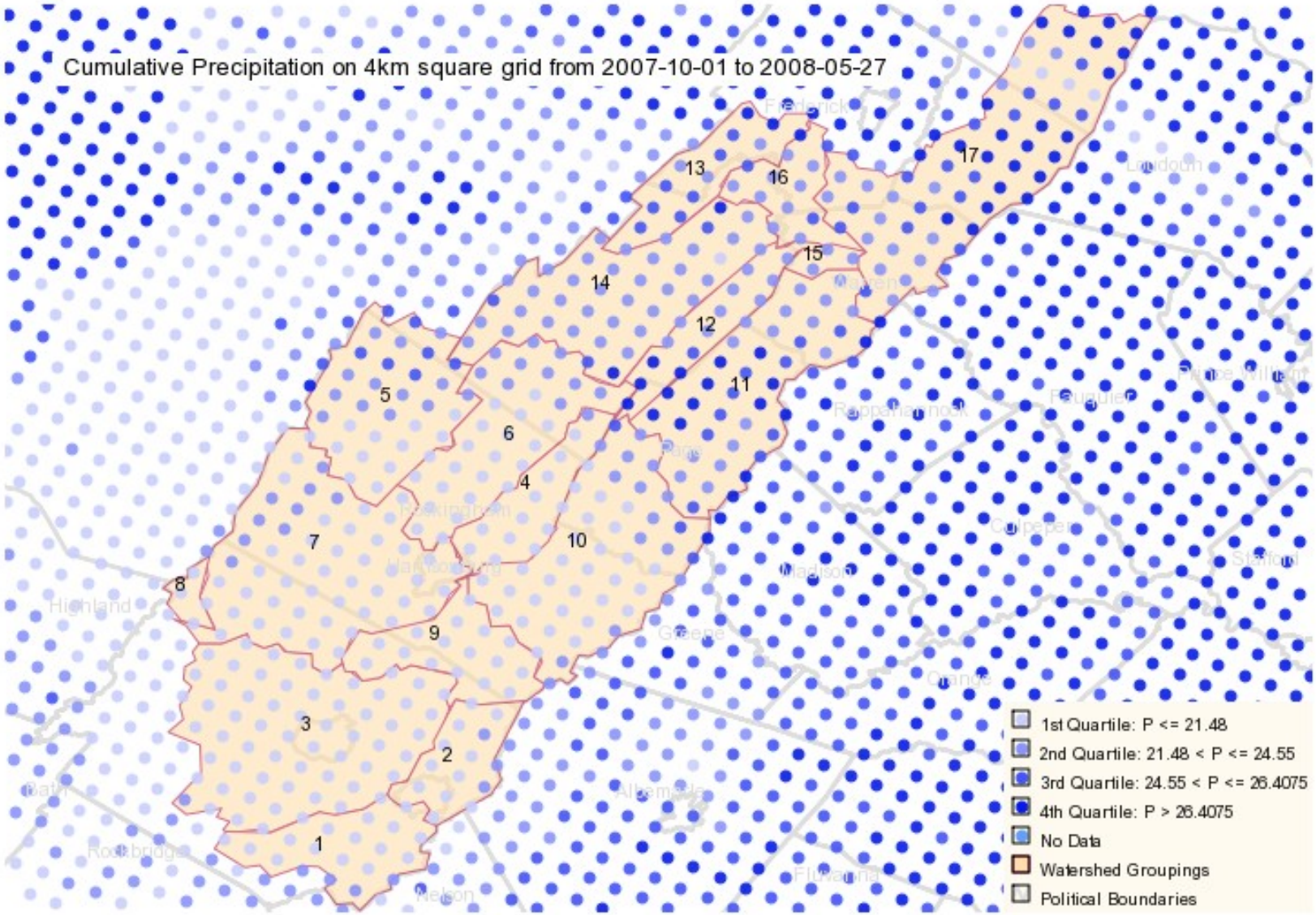
•Water before 10:00 a.m. to prevent evaporation during the hottest part of the day. Morning is better than evening, when the dampness encourages growth of fungus.

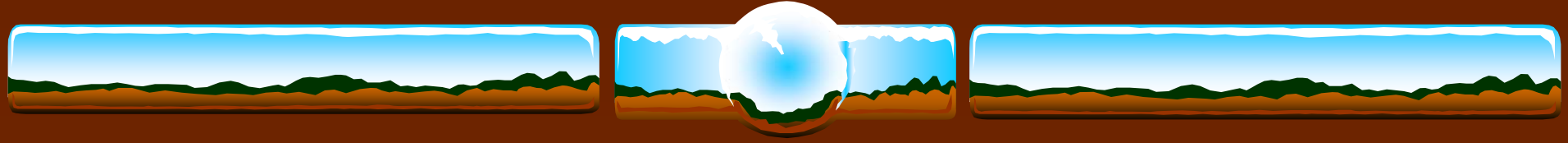
Why A Local Approach Within A Regional Context



	D4 Exceptional	D3 Extreme	D2 Severe	D1 Moderate	D0 Abnormally Dry	Normal	Wet
Drought Intensity							

Precipitation Summary for the Current Water Year (beginning October 1, 2007)



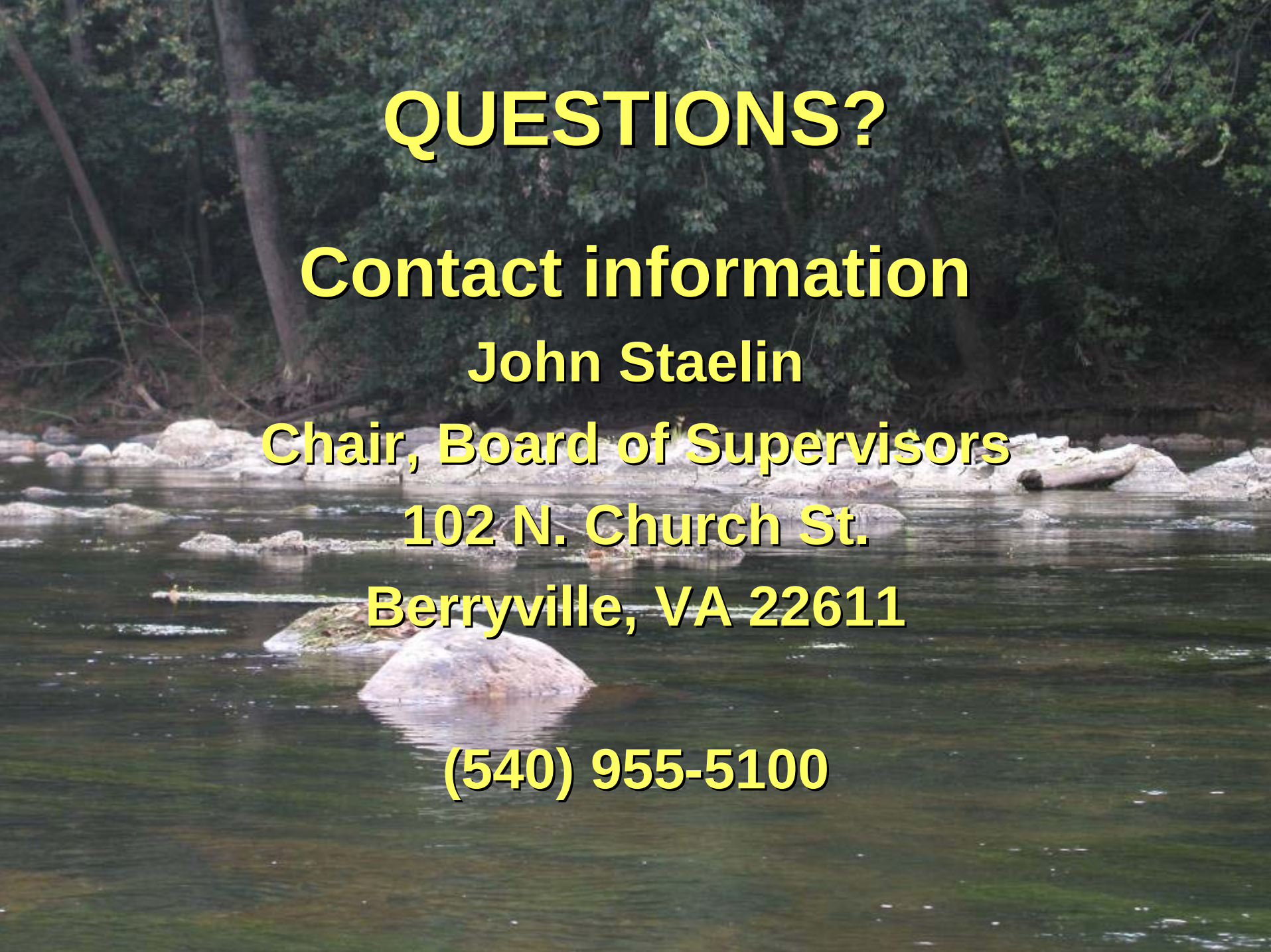


ADVANTAGES TO LOCAL INVOLVEMENT

- Use local data, conditions
- More opportunity for public education
- Better response from public

STILL RELIANT ON STATE EXPERTISE

Drought Status Reports



QUESTIONS?

Contact information

John Staelin

Chair, Board of Supervisors

102 N. Church St.

Berryville, VA 22611

(540) 955-5100